

Nearctic migrants in southwest Peru

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Compared with the numerous papers on Palaearctic migrants in different parts of Africa, relatively little has been published on Nearctic migrants in South America. Many local and regional lists, from which the presence or absence of migrants may be extracted, are scattered through the literature, and there have been papers dealing with specific groups of migrants; but there have been few general surveys of migration as a whole in any one country or section thereof.

The present paper brings together all known information on the status of Nearctic-breeding migrants in southwest Peru, accumulated over a period of 33 years starting in 1953.

For this purpose, southwest Peru is considered to include the whole of the departments of Arequipa, Moquegua and Tacna, together with the southern two-thirds of the department of Puno, comprising overall an area of some 80,000 km² lying between 14° and 18°S and between 69° and 75°W. The northern third of Puno is excluded, since it lies on the Amazonian slope of the Andes and belongs, biotically, to humid south-eastern Peru, so very different from the predominantly high and arid southwest.

Physical features

Southwest Peru is very mountainous and much of it lies at a great elevation above sea level. There is virtually no coastal plain bordering the Pacific, where the land rises steeply to the Coast Range at over 800 m within a few miles of the shore. The Coast Range is dwarfed by the Western Cordillera of the Andes, from which it is separated by a longitudinal depression of extremely arid plains, locally known as *pampas*, some 30–50 km in width. The Western Andes are characterized by extensive tablelands at 4000–4600 m, broken by higher ridges and punctuated by a succession of volcanoes, of which Coropuna (6615 m) is the highest.

Towards the northeast, the West Andean tablelands slope fairly gently into the Titicaca Basin or *Altiplano*, which consists of vast level plains at a mean altitude of 3810–4000 m, locally interrupted by ridges of low hills which seldom rise to more than a few hundred metres above the mean level of the surrounding plains. Still farther to the northeast beyond the plains of the *Altiplano* the land rises again, now to the spectacular snow-peaks of the Cordilleras de Carabaya and Real, which together form part of the East Andean system, marking a major climatic divide in southern Peru, separating the arid west from the extremely humid region to the east, which lies beyond the scope of this paper.

Towards the northwest, the *Altiplano* is enclosed by a series of transverse ridges, such as the Cordillera de Chila and others, which mark the watershed between the Titicaca Basin and the inter-Andean region of south-central Peru which is drained by the headstreams of rivers belonging to the Amazonian system.

Climate

Most of southwest Peru experiences a southern summer rainfall régime, with 80% of the annual total concentrated between December and March inclusive. Broadly speaking, the isohyets run parallel to the Pacific Coast, declining steadily from 600–800 mm on the *Altiplano* to less than 5 mm in the superdesert *pampas* behind the Coast Range. There is a small increase along the Coast Range and the Pacific Coast where, unlike the interior, most of the scanty rainfall occurs in the austral winter and spring (July to October), in the form of drizzle accompanying the sea-fogs which are typical of that time of year.

Temperatures depend largely on altitude and, away from the coast, are characterized by small annual ranges in combination with wide diurnal oscillations, which are especially noteworthy during the dry austral winter. Frost occurs at times as low as 2000 m and is regular at night in the winter above 3500 m, but day-long freezes are only exceptionally experienced even at 4500 m. The snowline on the Western Andes runs at the remarkably high level of 6000 m, these summits curiously carrying more snow in summer than in winter.

Along the Pacific Coast the cold upwelling waters of the Peru (Humboldt) Current exert a powerful influence, and temperatures are low for the latitude, averaging only 18.9°C at Mollendo (17°S), fully 6°C below the theoretical mean for the latitude. At long intervals the coastal region is affected by the warm waters of *El Niño*, the effects of which can be dramatic (Hughes 1985).

Habitats

Southwest Peru may be divided into 3 regions, each with its distinctive habitats.

THE PACIFIC COASTAL REGION

(a) *Pacific Ocean*. Dominated by the upwellings of the Peru Current, the coldest waters lie immediately adjacent to the coastline, where their average surface temperatures are close to 15°C (annual range 13°–19°C). 20–25 km offshore the sea temperature rises gradually with increasing distance from land.

(b) *Pacific Seaboard*. Heavily surf-beaten, sandy beaches and rocky stretches alternate, and occasional small islets occur.

(c) *Loma*. This formation of highly specialized fog-sustained vegetation of the Coast Range consists basically of a variety of herbaceous annuals, with woody thickets and occasionally even small trees. Most plants are active between August and November. Towards the interior the *loma* becomes increasingly depauperate and xeric, with associations of cacti and terrestrial bromeliads replacing the diversified annuals of the seaward-facing escarpments. Below 300 m the *loma* is very sparse and most of the narrow foothill zone between the Coast Range and the sea is desert, with a thin covering of low plants only during particularly damp seasons.

(d) *Superdesert*. Extreme desert conditions prevail over the *pampas* between the Coast Range and the West Andean foothills. These wastes



Figure 1. Sketchmap of southwest Peru to show habitat zones and localities with their departments and altitudes (m).

1. Chala (Arequipa)	Sea-level	15. Crucero Alto (Arequipa)	4470 m
2. Pucchun (Arequipa)	5 m	16. Toroya (Arequipa)	4700 m
3. Mollendo (Arequipa)	0-100 m	17. Lake Lagunillas (Puno)	4160 m
4. Mejia (Arequipa)	0-5 m	18. Cabanillas (Puno)	3850 m
5. Ite (Tacna)	Sea-level	19. Juliaca (Puno)	3820 m
6. La Yarada (Tacna)	Sea-level	20. Lake Umayo (Puno)	3820 m
7. Tacna (Tacna)	570 m	21. Puno (Puno)	3810-3900 m
8. Locumba (Tacna)	600 m	22. Lake Arapa (Puno)	3810 m
9. Moquegua (Moquegua)	1400 m	23. Taraco (Puno)	3810 m
10. Arequipa (Arequipa)	2300-2600 m	24. Chuquibambilla (Puno)	3950 m
11. Huanca (Arequipa)	3000 m		
12. Sumbay (Arequipa)	4100 m		
13. Chivay (Arequipa)	3500 m		
14. Laguna del Indio (Arequipa)	4400 m		

are utterly devoid of vegetation, but in some areas irrigation schemes have reclaimed parts of this driest of all the world's deserts.

(e) *Coastal valleys and irrigations.* A number of rivers descend to the Pacific Coast and, in marked contrast to the aridity of their surroundings, their valleys are very fertile and have been cultivated since the pre-Columbian period. In some areas irrigation projects have extended the

agricultural lands well beyond the natural confines of the valleys. Rice and sugar-cane are the principal crops in the larger valleys, with fruits, maize, vegetables, etc mostly at a subsistence level, in the smaller ones.

(f) *Coastal wetlands*. Near the mouths of the Majes and Tambo rivers there are shallow lagoons and pools surrounded by reed- and rushbeds grading into thickets of tall shrubs or saline grasslands on the drier ground. Insignificant patches of such habitat are also found near the mouths of some of the smaller rivers. Although of small extent, these coastal wetlands are of great significance to birdlife, native as well as migratory, since such habitat is so exceptional along the west coast of South America between 3° and 30°S.

THE WEST ANDEAN REGION

(a) *Desert Scrub*. The lowest foothills are as naked as the superdesert *pampas* from which they rise, but with increasing altitude and distance from the sea a poor xerophytic vegetation, termed Desert Scrub (Pearson 1978), develops, mainly between 1800 and 2800 m. Diverse cacti and dwarf deciduous shrubs are dominant, the latter in leaf only during the brief midsummer rains, together fleetingly with various small annuals.

(b) *Mountain Scrub*. Towards higher levels, with heavier and more regular rainfall, a considerably richer vegetation, termed Mountain Scrub (Pearson 1978) appears, in most parts at 2800–3900 m. Mountain Scrub is much taller and denser than Desert Scrub and cacti far less conspicuous, diverse bushes being the dominant element. At 3500–3800 m, where the vegetation attains its climax, there are localized relict woodlands of *Polylepis* trees.

(c) *Tolar*. Above 3900 m on the summit slopes, and thence inland over the tablelands behind the volcanic peaks, scrub is replaced by *Tolar*, an arid steppe formation dominated by the 'hard' bunch-grass *Festuca orthophylla* and extensive stands of *tola* bushes, *Lepidophyllum* spp.

(d) *West Andean valleys*. The upper reaches of the river valleys which descend to the Pacific Coast are mostly deeply entrenched within the mountains, sometimes constricted into impressively deep canyons. Agriculture is practised wherever possible in cultivated terraces, many having been worked since pre-Columbian times, those along the Colca valley in Arequipa department being particularly extensive. Temperate zone crops are raised, such as maize and other cereals, onions, beans, etc.

(e) *West Andean wetlands*. Wetlands are virtually non-existent on the steep and arid West Andean slopes, but on the tablelands there are spring-fed boggy tracts known as *bofedales* as well as scattered lakes, some of permanent fresh water, others seasonal and hypersaline.

THE ALTIPLANO REGION

(a) *Puna grassland*. This covers a vast area, from the eastern rim of the West Andean tablelands across the whole of the *Altiplano* to the crest of the Eastern Andes. The dominant element is the 'soft' bunch-grass *Stipa ichu*; other smaller grasses flourish between the tufts and numerous low-growing annuals flower from January to May, in and after the rains. Woody vegetation is largely lacking, but in scattered localities there are open *Polylepis* woodlands.

(b) *Altiplano agricultural lands*. The raising of sheep, cattle and llamas is the main occupation, but some cold temperature crops are grown, mainly potatoes, but also some cereals and indigenous crops such as quinoa and oca.

(c) *Altiplano wetlands*. Apart from the 8000 km² of Lake Titicaca, there are many fresh or slightly brackish lakes, some of considerable size. Most have extensive shoreline belts of emergent and floating vegetation, often backed by boggy tracts subject to inundation during the summer rains. The many rivers are relatively slow-flowing and liable to flood in the rainy season. There are also spring-fed *bofedales*.

The Nearctic Migrants

Fifty-eight species of Nearctic migrants have been recorded from southwest Peru since 1953 (see Appendix), 46 of them regularly in varying degrees of abundance, while 12 are vagrants. The status of all 58 species by families is given in Table 1.

Nearctic migrants occur from the ocean beaches and Pacific coastal waters to above 4600 m in the Andes, but much of the territory is overflowed and the birds are present in abundance only along the Pacific Coast and in wetland habitats, Andean as well as coastal. Far fewer species occur in agricultural areas, while scrub, steppe and grassland habitats are largely unvisited. The superdesert *pampas* near the coast are, of course, inimical to all forms of birdlife.

The Nearctic waders meet with virtually no competition from native species, there being no native Scolopacidae in the coastal region and only the Andean Snipe *Gallinago andina* in the mountains in small numbers. *G. stricklandii* and *G. imperialis* apparently do not occur. The 2 migratory *Pluvialis* plovers have no native counterparts, but *P. dominica* may

TABLE 1

Status of Nearctic migrants and vagrants by families in southwest Peru

	Regular migrants	Vagrants	Total
Anatidae	1	—	1
Accipitridae	—	1	1
Pandionidae	1	—	1
Falconidae	1	—	1
Charadriidae	3	—	3
Scolopacidae	18	5	23
Phalaropodidae	3	—	3
Stercorariidae	2	—	2
Laridae	10	1	11
Rynchopidae	1	—	1
Cuculidae	—	1	1
Apodidae	1	—	1
Tyrannidae	—	2	2
Hirundinidae	3	—	3
Turdidae	1	—	1
Vireonidae	—	1	1
Parulidae	—	1	1
Icteridae	1	—	1
Totals	46	12	58

possibly compete with both the Andean Lapwing *Vanellus resplendens* and the Tawny-throated Dotterel *Oreopholus ruficollis* in the Andes, although the native birds tend to prefer drier ground. On the coast, the Semipalmated Plover *Charadrius semipalmatus* certainly competes with the native race of the Kentish Plover *C. alexandrinus*, but the resident Killdeer *C. vociferus* favours marshier situations and is a substantially larger bird.

The huge passage and wintering flocks of Franklin's Gulls *Larus pipixcan* crowd the south Peruvian beaches when most of the population of Grey Gulls *L. modestus* has shifted southwards to breed in the north Chilean deserts. The latter's post-breeding return overlaps to some extent the departure of the Franklin's Gulls, but even when both species are present in large numbers there is little obvious competition between them, since the Franklin's Gull is a much more generalized feeder than the Grey Gull. Other native gulls such as the Kelp Gull *L. dominicanus*, Band-tailed Gull *L. belcheri* and Grey-hooded Gull *L. cirrocephalus* have much smaller populations: the first 2 are large, predatory and strictly marine species, while the last is largely restricted to coastal lagoons.

The Nearctic-breeding terns, especially the Elegant Tern *Sterna elegans* and the Common Tern *S. hirundo* are seasonally much more numerous than any of the native terns and in coastal and Andean Peru there are no native Black Skimmers *Rynchops nigra*. Nor are there any native skuas, but in the austral winter Great Skuas *Catharacta skua* from Magellanic South America visit south Peruvian waters and there is some overlap with the Nearctic skuas in October and March–April. However, no interactions have been seen between them, *Catharacta* tending to victimize boobies and the larger gulls, whereas the 2 *Stercorarius* species harry terns.

Hirundines and swifts are the only conspicuous Nearctic passerines and near-passerines in southwest Peru. The Barn Swallow *Hirundo rustica* is much more abundant than any native swallow in the coastal region between October and April; but in the Andes above 1500 m it is always out-numbered by the Blue-and-White Swallow *Notiochelidon cyanoleuca* at intermediate levels up to 3000 m and by Andean Swallows *Petrochelidon andecolus* above 3000 m. Similarly, the Chimney Swift *Chaetura pelagica* outnumbers the Andean Swift *Aeronautes andecolus* on the coast, but in the West Andean valleys the situation is reversed and neither occurs much above 3500 m.

Migrant species of other families are each represented by no more than 1–2 species, several of them merely vagrants; apart from the Osprey *Pandion haliaetus* which has no resident populations in South America, none of them appear dominant over native representatives of the same families.

SPECIES ACCOUNTS

BLUE-WINGED TEAL *Anas discors*

Of annual occurrence in small numbers, usually in pairs or up to 10 together, at the coastal lagoons of Dept. Arequipa (Mejía, Pucchún), the southern limit of its regular wintering range. Associates closely with native ducks, especially *A. cyanoptera* and *A. bahamensis*. Mainly Nov–Mar, but as early as Aug in 1954 and 1979.

BROAD-WINGED HAWK *Buteo platypterus*

Vagrant to the coast. Only 2 records: an adult in irrigated farmland near Mollendo (Arequipa) 22 Dec 1972 to 20 Mar 1973 and an immature there, 17 Oct 1980.

OSPREY *Pandion haliaetus*

Regular along the whole coast at any time, more commonly Nov-Apr. Usually singly, but at favoured sites, such as the Mejía Lagoons, up to 10 along 3–4 km of shoreline. Not seen in the West Andean region but surprisingly one was observed 16 Oct 1983 at Lake Titicaca (3810 m) flying across the bay at Puno being mobbed by *Larus serranus*. Also reported by N. Krabbe from Lake Junín (4090 m), central Peru; so the Osprey may penetrate the high Andes fairly regularly.

PEREGRINE *Falco peregrinus*

Breeding. Suspected in West Andean foothills near Tacna (Ellis & Glinski 1980). (See Jenny *et al.* 1981, 1983, Schoonmaker *et al.* 1985 for proof of breeding in Ecuador and Peru.)

Regular Sep-Apr along coast, preying on waders, especially *Calidris alba*, but also *Tringa* spp. and *Numenius phaeopus*, *Sterna hirundo*, unidentified *Oceanites* sp. (on Arequipa and Tacna coasts), doves, hirundines, sparrows and *Geositta cunicularia* (once). Only recorded in Arequipa, Western Andes (2300–2600 m) Oct to early May and 1 at Chivay (3500 m), 7 Oct 1984. Only 2 records, singletons, on *Altiplano*: near Juliaca (3820 m), Dept. Puno, 17 Nov 1976 and near Puno (3880 m) 16 Oct 1983.

GREY PLOVER *Pluvialis squatarola*

Regular along the coast Sep-Apr, occasionally in other months. Mostly in groups of up to 40, but as many as 300 at times. Favour sandy beaches and coastal lagoons. Sometimes in breeding plumage (Aug-Sep, Apr-May) but over-summering birds invariably retain non-breeding plumage.

LESSER GOLDEN PLOVER *Pluvialis dominica*

A double passage-migrant occurring mainly Oct-Nov and Feb-Apr with maximum numbers in March. Much more numerous in bogs and damp grasslands of the Andes than along the coast, with flocks of hundreds at times on the *Altiplano*. Observed as high as 4400 m (Laguna del Indio, Dept. Arequipa). On the coast, is more regular than implied by the literature, on grassy terrain, ploughed fields and lagoons, rarely ocean beaches.

SEMIPALMATED PLOVER *Charadrius semipalmatus*

Regular along the coast Aug-May, occasionally Jun-Jul. Usually in parties of up to 12 together at the muddy margins of coastal lagoons, where they associate with resident *C. alexandrinus*, and also at times on sandy beaches, less often on rocky stretches of the seaboard.

SURFBIRD *Aphriza virgata*

Regular along the coast on passage, some wintering locally on suitably rocky sections, Aug-Mar, often together with *Arenaria interpres*. Resident birds exploiting the rocky coast environment include Blackish Oystercatchers *Haematopus ater* and Surf Cinclodes *Cinclodes taczanowskii* but I have no evidence of interspecific hostility with Surfbird. No May or Jul records, but on 25 June 1975 I saw 48 Surfbirds at Chala (Dept. Arequipa), many in breeding plumage.

RUDDY TURNSTONE *Arenaria interpres*

Regular along the coast Aug-May, most plentiful on passage, with at least a few every year May-Jul inclusive. Usually in groups of up to 15, but as many as 300+ on occasion. Occurs anywhere along the coast, on rocky and sandy sections alike, also regularly at coastal lagoons.

SOLITARY SANDPIPER *Tringa solitaria*

Vagrant, mainly east of the Andes. Occurs only as far south as Lima, west-central Peru, but uncommonly even there (Koepcke 1970), with only a single record further south from Tarapacá in northernmost Chile (McFarlane 1974). I have 5 records in the Mollendo-Mejía

district of coastal Arequipa – 21 Dec 1974, 25 Aug 1976, 22 Oct 1976, 16 Aug 1980 and 8 Oct 1980 – in each case singletons feeding along ditches or small puddles in irrigated farmland. Has also been recorded from Lake Umayo (3820 m) in the *Altiplano* of Dept. Puno (Scott & Carbonell 1986).

LESSER YELLOWLEGS *Tringa flavipes*

Regular Aug-May around lagoons, lakes, pools, riverbanks, flooded grasslands and marshy tracts from the coast to well over 4000 m in the Andes, often together with *T. melanoleuca*. More numerous during the 2 passage periods, especially Mar-Apr, when flocks of hundreds occur especially at coastal lagoons. Very occasional Jun-Jul; oversummers far less frequently than *T. melanoleuca*.

GREATER YELLOWLEGS *Tringa melanoleuca*

Regular throughout, in suitable habitats, from the coast to as high as 4470 m in the Andes (Crucero Alto, Dept. Arequipa). Most numerous Sep-Apr and, unlike *T. flavipes*, not noticeably more abundant in spring. Usually in parties of up to 20, never in large flocks. Isolated birds occur every year May-Jul at high altitudes in the Andes as well as along the coast.

SPOTTED SANDPIPER *Actitis macularia*

Regular Aug-May along the coast and in West Andean river valleys up to at least 3400 m (Colca valley, Dept. Arequipa) but never seen in the *Altiplano*. Usually singly or in pairs along riverbanks, ditches and lagoon margins, rarely on occasion beaches or rocky coves. From mid April onwards and sometimes in August is often in breeding plumage.

WILLET *Catoptrophorus semipalmatus*

Regular along the coast Aug-Mar in variable numbers. Favours sandy beaches but also visits coastal lagoons. Usually fewer than 10 together, but on 31 Dec 1983 a flock of 250 was present at the mouth of the Tambo river near Mejía and I have several sightings of 50+ from the same area. In 1982 26 were present in a flock at Mejía all Jun-Jul.

KNOT *Calidris canutus*

Regular but scarce, on sandy beaches and lagoon margins, often with *Pluvialis squatarola*, Aug-Apr. Up to 5 together, but 80 at Mejía, 1 May 1970, some assuming breeding plumage, with, exceptionally, 3 birds in full breeding plumage there 3 July 1982.

LEAST SANDPIPER *Calidris minutilla*

Regular at coastal lagoons Aug-Apr. No evidence of passage peaks and usually up to 30 together. Of at least casual occurrence in the Andes: a singleton with *C. bairdii* at Lake Titicaca, near Puno, 16 Dec 1968; and B. Wylie reported 1 from a bog near Sumbay, Dept. Arequipa (4100 m), 25 Oct 1984. Already reported from the high Andes of Bolivia by Pearson (1975).

BAIRD'S SANDPIPER *Calidris bairdii*

The most wide-ranging of all Nearctic migrants, occurring from the ocean beaches up to at least 4700 m in the Andes (Toroya, Dept. Arequipa), frequenting diverse habitats, including sandy beaches, the margins of lakes and pools, etc, but most frequently bogs and grasslands, sometimes at some distance from water. On the coast is primarily a double passage-migrant, late Jul-Nov and again Feb-Apr, but many winter in the high Andes, especially on the *Altiplano*, where flocks of hundreds may be seen. Numbers vary annually in the coastal region, always in much smaller numbers, often singly and rarely up to 50. Occasionally lingers into May, but I have only 3 Jun records, all of singletons at Mejía: 3 Jun 1982, 11 Jun 1982 and 16 Jun 1984.

WHITE-RUMPED SANDPIPER *Calidris fuscicollis*

Vagrant on the Pacific Coast, its migratory routes and wintering grounds lie to the east of the Andes. My only records are of 3 near Mollendo, 14 Apr 1956 and singles at Mejía, 29 Nov 1970, 5 Nov 1976 and 19 Feb 1986.

PECTORAL SANDPIPER *Calidris melanotos*

A double passage-migrant late Jul-Nov and Feb-Apr from the coast to at least 4400 m in the Andes (Laguna del Indio, Dept. Arequipa), at flooded grasslands, bogs and the margins of lakes and lagoons, usually fewer than 20 together. Small numbers may winter on the *Altiplano*.

SEMIPALMATED SANDPIPER *Calidris pusilla*

Regular mid Aug to Apr at coastal lagoons, and usually the most numerous of the small *Calidris* species. No passage peaks, but usually most plentiful Dec-Feb. No May-Jul records.

WESTERN SANDPIPER *Calidris mauri*

Probably under-recorded due to its great similarity to and close association with *C. pusilla*. A few, seldom as many as 10 together, occur virtually every year at Mejía, Sep-Apr, among considerably larger numbers of *C. pusilla*.

RUFIOUS-NECKED STINT *Calidris ruficollis*

An East Palaearctic migrant breeding sporadically in Alaska (Cramp & Simmons 1983). On 23 Aug 1985 I observed an individual in its diagnostic summer plumage at Mejía. J. P. Myers (*in litt.* 7 Sep 1985) stated: "The only possible source of confusion is a very bright Little Stint *C. minuta*, and that would never come truly close to a bright breeding plumaged Rufous-necked. Rufous-necks are appearing with some regularity now in the USA. Their detection in South America was only a matter of time." This would seem to be the first record for the species in South America.

SANDERLING *Calidris alba*

The sandy beaches of southwest Peru hold some of the largest wintering concentrations of Sanderlings in the Western Hemisphere (J. P. Myers). Recorded in every month, the largest numbers during the 2 passage periods and, more locally, throughout the austral summer. Occurs primarily along the ocean beaches, feeding on the small sand-crab *Emerita analoga* and subjected to considerable harassment by *L. modestus* and *L. pipixcan* and by *Sterna hirundo* in usually unsuccessful attempts to rob them of their food. Also present in relatively small numbers at coastal lagoons.

STILT SANDPIPER *Micropalama himantopus*

Regular at coastal lagoons, Sep-Apr, with scattered records for all other months. Sometimes more than 50 together, often in association with the 2 yellowlegs. Seen once on the ocean beach: 12 near La Yarada (Dept. Tacna), 17 Mar 1984. I have no records for the Andes; Scott & Carbonell (1986) list it from the Lake Arapa and Taraco district of the *Altiplano* of Puno department at 3810 m.

BUFF-BREASTED SANDPIPER *Tryngites subruficollis*

Recorded only since 1984 and from a single site, a patch of dry hummocky grassland near Mejía. First seen there by W. Wyper, 19 Feb 1984, confirmed by me next day (20 birds); subsequently occurred 26 Feb 1984 (11), 27 Mar 1984 (1), 6 Apr 1984 (45), 22 Feb 1985 (2), 28 Feb 1985 (6), 23 Mar 1985 (1), 10 Apr 1985 (10), 11 Dec 1985 (6), 19 Feb 1986 (5), 28 Feb 1986 (2), 8 Apr 1986 (5) and 25 Apr 1986 (2). None seen in the 1986-87 season despite repeated searching. The main wintering grounds are in eastern Argentina; seldom recorded from anywhere along the Pacific Coast.

UPLAND SANDPIPER *Bartramia longicauda*

Casual on the Pacific Coast; its wintering grounds are in southeastern South America. My only record is of one on grassland near Mejía, 10 Apr 1985. R. Ridgely observed the species in the same general area, 28 Feb 1977.

WHIMBREL *Numenius phaeopus*

Regular along the coast, recorded in every month. Particularly numerous during the 2 passage periods, frequently 50-100 together, smaller numbers remaining throughout the

austral summer. Regular Jun-Jul, but usually only singly. Visits ocean beaches, lagoon margins, farmland, etc, sometimes penetrating some distance up coastal valleys, but I have no records from the Andes.

HUDSONIAN GODWIT *Limosa haemastica*

Scarce but annual visitor to coastal lagoons, much more regular than implied by the literature, mainly Sep-Apr, but a few May-Aug sightings, including 3 at Ite (Dept. Tacna), 29 Jul 1984, the first for that department. Usually up to 5 together, but 18 were seen at Mejía on several dates Mar-Apr 1986. Birds Apr-May have sometimes been in breeding plumage.

MARbled GODWIT *Limosa fedoa*

A vagrant to the coast of Peru; its wintering grounds are in the southern Nearctic, Mexico and Central America. Four records, all from Mejía: 8 Dec 1969 (1), 5 Nov 1975 (1), 10 Jun 1977 (2, still present 28 June when seen also by D. R. Paulson) and 26 Sep 1986 (1).

COMMON DOWITCHER *Limnodromus griseus*

Regular in very small numbers to coastal lagoons Aug-May, mostly Jan-Mar. Usually fewer than 6 together and never more than 10. Sometimes in breeding plumage (Aug and May).

GREY PHALAROPE *Phalaropus fulicarius*

RED-NECKED PHALAROPE *Lobipes lobatus*

Specific identification of birds seen off the beaches is often impossible. Both have been positively identified and both, especially *lobatus*, sometimes visit coastal lagoons, but nearly always flocks are seen on or over the sea where they tend to congregate along the foam-lines some distance offshore. Numbers vary greatly annually from very few some years (1983, 1984) to thousands in others (1982, 1985). Largest numbers usually occur Sep-Nov, but I have records for all months. I have seen *fulicarius* in breeding plumage Aug-Sep; and on the exceptional date of 8 Jul 1986 a summer-plumaged *lobatus* was noted at Mejía Lagoons.

WILSON'S PHALAROPE *Steganopus tricolor*

Mainly a double passage-migrant late Aug to Oct and Feb to early May, but many winter on high Andean lakes. Occasional Jun-Jul at coastal lagoons. Occurs from sea-level to well over 4000 m in the Andes and at peak passage flocks of hundreds, sometimes thousands, may be seen at lagoons, lakes, pools and flooded grasslands. Most birds seen Apr-May are in breeding plumage.

ARCTIC SKUA *Stercorarius parasiticus*

POMARINE SKUA *Stercorarius pomarinus*

Common over coastal waters Oct-Apr with up to 2 occasionally May-Sep. Usually singletons or pairs, but up to 50+ at concentrations of terns and gulls around inshore fishing-boats. Distant identifications often inconclusive, but the great majority are *parasiticus*, *pomarinus* having seldom been positively identified. I have no records of *S. longicaudatus*, which has been reported from Chilean seas. The predominant prey species is *S. elegans* but they also harry *S. sandvicensis*, *S. hirundo* and, less so, *Larosterna inca* and *Larus pipixcan*. Pale birds predominate over the other morphs 10 : 1.

LAUGHING GULL *Larus atricilla*

A scarce visitor to the coast; this is at the southern limit of its wintering range. 1-2 singletons recorded almost every year in the Mollendo-Mejía district, generally Jan-Mar but as early as 9 Oct 1985 and as late as 26 May 1984, the latter in full breeding plumage.

FRANKLIN'S GULL *Larus pipixcan*

Regular along the coast late Oct to early May, in immense numbers on passage and very abundant throughout the austral summer months. Most years is completely absent Jun-Sep inclusive. Most plentiful along sandy beaches but large flocks often visit coastal lagoons and irrigated farmlands near the sea, especially paddyfields. Breeding plumage assumed in March.

Some years, for reasons which are unclear, flocks penetrate far up the West Andean valleys, reaching the Arequipa district (2300–2600 m) with some regularity and the Colca valley (3200–3500 m) occasionally. Rarely, penetrates even further – 30+ on 9 May 1976 at Lake Titicaca, near Puno and a singleton, 7 Dec 1976, at Cabanillas (3850 m) in the *Altiplano* of Dept. Puno. The West Andean passes to the Titicaca Basin are at a minimum altitude of 4400–4500 m. A flock of 200 observed by J. Fjeldså at Lake Lagunillas (4160 m) Dept. Puno, Dec 1977 (Scott & Carbonell 1986) must have been in transit.

SABINE'S GULL *Xema sabini*

The seas off Peru are one of the main Pacific wintering areas of Sabine's Gull (Chapman 1969), but it is seldom seen from land. Recorded from the Mollendo district Aug–Mar inclusive, usually singletons or pairs but on 16 Sep 1968, 61 passed SE close inshore within an hour and on 25 Oct 1970 I saw a flock of 30 from a fishing-boat 5 miles offshore. A bird at Mollendo, 14 Aug 1969, was still in full breeding plumage.

BLACK TERN *Chlidonias niger*

Irregular at coastal lagoons, mostly Dec–Mar, but recorded also Apr, Jul, Aug, Sep and Oct. Some years it is absent (1984, 1985), but in others plentiful, e.g. 1972–3 when as many as 120+ were counted at Mejía Lagoons on several dates between Dec and Mar. Birds in Jul and Aug have been in breeding plumage.

GULL-BILLED TERN *Gelochelidon nilotica*

Regular but very scarce along the coast, most frequently at lagoons but also, at times, along ocean beaches, in all months, mostly Nov–Apr. Usually singly and never more than 6 together. Almost always in non-breeding plumage.

COMMON TERN *Sterna hirundo*

Regular and numerous along the coast Oct–Apr with weakly defined passage peaks. Scattered singletons most years Jun to Sep. At sandy beaches, form monospecific roosts of hundreds at certain locations, or parts of larger aggregations which include *S. elegans*, *S. sandvicensis*, *L. pipixcan*, *L. modestus* and sometimes *Rynchops nigra* as well. Feeds almost exclusively on the sand-crab *Emerita analoga* taken in the wave-washed zone between the line of breakers and the shoreline (H. Blokpoel) and seldom fishes beyond the breakers. Kleptoparasitic chases of *Calidris alba* are often seen. Invariably in non-breeding plumage until early Apr when a small minority begin to assume breeding plumage. A number of wing-tagged birds, marked by the Canadian Wildlife Service at nesting colonies on Lake Ontario, were observed and individually identified on the Mollendo–Mejía beaches in the northern winters of 1982–83, 1983–84 and 1984–85.

ARCTIC TERN *Sterna paradisaea*

Probably under-recorded but a few are positively identified each year in the Mollendo–Mejía district, mostly Oct, Mar and Apr, but also Feb, May, Jun and Nov. Occasionally up to 10 together, sometimes alone but more often together with *S. hirundo*.

LEAST TERN *Sterna antillarum*

Recorded only in recent years, always at the Mejía Lagoons and involving 1–2 birds: 18 Dec 1982, 26 Dec 1982, 26 Sep 1983, 31 Dec 1983, 15 Feb 1984, 2 Mar 1984, 3 Jul 1984, 27 Sep 1984, 25 Oct 1984, 21 Feb 1985, 10 Oct 1985, 5 Nov 1985, 26 Nov 1985, 22 Jan 1986, 26 Sep 1986 and 25 Oct 1986. Seen also by W. Wyper, D. A. Scott, J. Parslow, T. Schulenberg, B. Wylie, amongst others. Since only 1982 has been observed on the Peruvian coast and since then farther north in central Peru (R. Schulenberg). At least some of the more distant sightings may refer to the very similar Yellow-billed (no black tip) Tern *S. supercilialis*, as yet unrecorded from the Peruvian coast.

ROYAL TERN *Sterna maxima*

Small numbers winter regularly as far south as west-central Peru (Parácas Bay, Dept. Ica), but is only a rare vagrant farther south. I have fewer than 10 records (Nov–Mar), never more than one in any year. These few were with *S. elegans*, and were readily separable by their larger size and bulkier build, but distant views are often inconclusive; possibly under-recorded.

ELEGANT TERN *Sterna elegans*

Regular along the coast Oct-Apr; abundant, sometimes in thousands, on passage considerable numbers remaining throughout the austral summer. I also have records for May-Sep inclusive, mostly of singletons. Large roosts, often mixed, are formed on sandy beaches. Unlike *S. hirundo* invariably fishes beyond the line of breakers, where they suffer much harassment by skuas. Breeding plumage is assumed in Feb and courtship activities, both ground and aerial, begin in Mar and by the time of the main Apr departure many birds are apparently already paired.

SANDWICH TERN *Sterna sandvicensis*

Regular along the coast Nov-Apr in relatively small numbers, seldom more than 20 together, and with no passage peaks. I also have a few records for Oct, May and Jun. Associates closely with *S. elegans* and similarly fishes beyond the breakers. Unrecorded until Apr 1973, but seen every year since. Until 1972 recorded for Peru only from Sechura Bay, Dept. Piura (Campbell 1971) and not recorded by Koepcke (1970). Since 1973, however, has been reported from numerous points along the Peruvian coast and even from Arica in northernmost Chile (McFarlane 1974); a definite expansion in the wintering range seems to have taken place.

BLACK SKIMMER *Rynchops nigra*

Regular along the coast Oct-Apr, characteristically in large flocks over certain restricted stretches of beach, usually close to coastal lagoons or river-mouths, with only small groups elsewhere. Flocks of 5000–10,000 birds occur at times in the Mejía district. Recorded also in all other months, but Jun-Sep sightings are very few and of small numbers of birds. Murphy (1936) records, remarkably, one at Lake Titicaca, but I have never seen the species anywhere in the Andes. Resident populations occur along the lowland rivers of southeast Peru and the origin of the Titicaca bird can only be a matter of speculation.

YELLOW-BILLED CUCKOO *Coccyzus americanus*

Accidental visitor to the coast: one record, of a bird in my garden near Mollendo, 17 Dec 1980. Although known to winter as far south as northern Argentina, this seems to be the first record for the Pacific slope of Peru.

CHIMNEY SWIFT *Chaetura pelagica*

Regular along the coast and in West Andean valleys Nov-Apr, occurring annually as high as 2500 m near Arequipa and at least occasionally as high as 3000 m (Huanca, Dept. Arequipa – B. Wylie). Frequents irrigated farmland, suburban areas and even city centres; at dusk on 21 Dec 1979 a flock of at least 300 was watched hurtling round over a small square in the middle of the city of Tacna, no doubt a pre-roost gathering.

EASTERN KINGBIRD *Tyrannus tyrannus*

A rare vagrant to the coast. All my records are from irrigated farmland near Mollendo: 28 Feb 1970 (2), 30 Nov 1970 (1), 22 Jan 1971 (1), 1 Jan 1972 (1), 21 Jan 1973 (1), 28 Oct 1973 (1), 6 Feb 1976 (1) and 13 Feb 1976 (2).

OLIVE-SIDED FLYCATCHER *Nuttallornis borealis*

Accidental on the coast. One record, a bird in my garden near Mollendo, 29–31 Oct 1979, hawking from different perches in a line of *Casuarina* trees. Normally winters along the humid eastern slopes of the Andes between Colombia and Bolivia (de Schauensee 1970). This is apparently the first record for the Pacific slope of Peru.

SAND MARTIN *Riparia riparia*

Regular along the coast Sep-Apr, most in evidence Oct-Nov, often together with far larger numbers of *Hirundo rustica*. Relatively few, seldom more than 30–50 together, remain throughout the austral summer in favourable areas such as the proximity of coastal lagoons. Wanders occasionally up the West Andean valleys to as high as 2300 m, where I have seen it near Arequipa.

BARN SWALLOW *Hirundo rustica*

Occurs virtually throughout southwest Peru, abundantly along the coast but in only small numbers at high altitudes in the Andes. From the coast I have records for all months, but is usually absent between mid May and late Aug. Passage is conspicuous, Oct-Nov, as a thin but continuous stream, which may last for days together. Large numbers winter in suitable areas, such as coastal wetlands and irrigated farmlands up to 1500 m, but is rare at higher altitudes and then principally on passage. None winters on the *Altiplano*; small numbers trickle through chiefly Oct-Nov, but also in Apr, and would have to have risen above elevations of 4400 m. The species has already been recorded from extremely high levels in the Bolivian Andes (Dott 1985).

CLIFF SWALLOW *Petrochelidon pyrrhonota*

Regular along the coast, primarily on both passages, especially Oct-Nov. Very few seen Dec-Feb and I have no records for May-Aug inclusive. The least numerous of the three Nearctic hirundines known from southwest Peru. Scarce away from the coast, but I have records for Arequipa (Dept. Arequipa), Moquegua (Dept. Moquegua) and Locumba (Dept. Tacna) at 600–2300 m in the West Andean valleys and it reaches the *Altiplano* at times: on 16 Oct 1977 I watched one hawking together with Andean Swallows *P. andecola* at Lake Umayo (Dept. Puno), 3820 m, and on 28 Oct 1983 noted 2 migrating south together with *H. rustica* near Chuquibambilla (Dept. Puno) 3950 m.

SWAINSON'S THRUSH *Catharus ustulatus*

Occurs almost annually on the coast, always singly except once 2 together, Dec 1980. All were in my garden near Mollendo and all between late Nov and early Jan. Skulks in shady corners, so may be under-recorded. Is attracted to the ripe berries of *Lantana* shrubs. The main wintering grounds are along the humid eastern slopes of the Andes between Venezuela and northwest Argentina and there are very few records from the Pacific slope of Peru.

RED-EYED VIREO *Vireo olivaceus*

Accidental on the coast. I have only 3 records, of single birds in my garden near Mollendo: 30 Nov 1969, 5 Apr 1981 and 16 Feb 1985. In view of the dates, they were presumed to be of the strongly migratory Nearctic-breeding race, for which there is a record from as far south as Vallenar, Chile (Johnson 1965), rather than of any of the less migratory South American races of the species.

BOBOLINK *Dolichonyx oryziborus*

Recorded annually in coastal wetlands, Dec-Feb, usually in *Typha*. Up to 30+ seen at Mejia. Winters mainly in grasslands of central South America, but some move down the Pacific Coast, even as far as Antofagasta, Chile (Howell 1975).

AMERICAN REDSTART *Setophaga ruticilla*

A rare vagrant to the coast. All my records are of single, female- or immature male-plumaged individuals in my garden near Mollendo: 24 June 1971, 14-15 Aug 1971, many dates in Jun-Jul 1973, 25 Dec 1975, 28 Nov 1978 and 21-22 Oct 1986. The protracted stays and remarkable dates of the 1971 and 1973 birds seem noteworthy.

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	PACIFIC COAST						W. ANDES				ALTIPLANO			
	a	b	c	d	e	f	a	b	c	d	e	a	b	c
<i>Limosa haemastica</i> , Hudsonian Godwit	—	—	—	—	—	x	—	—	—	—	—	—	—	—
<i>Limosa fedoa</i> , Marbled Godwit	—	—	—	—	—	V	—	—	—	—	—	—	—	—
<i>Limnodromus griseus</i> , Common Dowitcher	—	—	—	—	—	x	—	—	—	—	—	—	—	—
<i>Phalaropus fulicarius</i> , Grey Phalarope	X	—	—	—	—	x	—	—	—	—	—	—	—	—
<i>Lobipes lobatus</i> , Red-necked Phalarope	X	—	—	—	—	x	—	—	—	—	—	—	—	—
<i>Steganopus tricolor</i> , Wilson's Phalarope	x	—	—	—	x	X	—	—	—	—	X	—	—	X
<i>Stercorarius parasiticus</i> , Arctic Skua	X	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Stercorarius pomarinus</i> , Pomarine Skua	x	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Larus atricilla</i> , Laughing Gull	x	x	—	—	—	—	—	—	—	—	—	—	—	—
<i>Larus pipixcan</i> , Franklin's Gull	X	X	x	—	X	X	—	—	—	x	—	—	—	V
<i>Xema sabini</i> , Sabine's Gull	x	—	—	—	—	—	—	—	—	—	—	—	—	—
<i>Chlidonias niger</i> , Black Tern	x	—	—	—	x	x	—	—	—	—	—	—	—	—
<i>Gelochelidon nitotica</i> , Gull-billed Tern	—	x	—	—	x	—	—	—	—	—	—	—	—	—
<i>Sterna hirundo</i> , Common Tern	X	X	—	—	—	X	—	—	—	—	—	—	—	—
<i>Sterna paradisaea</i> , Arctic Tern	x	x	—	—	—	—	—	—	—	—	—	—	—	—
<i>Sterna antillarum</i> , Least Tern	—	—	—	—	—	x	—	—	—	—	—	—	—	—
<i>Sterna maxima</i> , Royal Tern	V	V	—	—	—	—	—	—	—	—	—	—	—	—
<i>Sterna elegans</i> , Elegant Tern	X	X	—	—	—	X	—	—	—	—	—	—	—	—
<i>Sterna sandvicensis</i> , Sandwich Tern	X	X	—	—	—	—	—	—	—	—	—	—	—	—
<i>Rynchops nigra</i> , Black Skimmer	X	X	—	—	—	x	—	—	—	—	—	—	—	V
<i>Coccyzus americanus</i> , Yellow-billed Cuckoo	—	—	—	—	—	V	—	—	—	—	—	—	—	—
<i>Chaetura pelagica</i> , Chimney Swift	—	—	—	—	X	—	—	—	—	X	—	—	—	—
<i>Tyrannus tyrannus</i> , Eastern Kingbird	—	—	—	—	V	—	—	—	—	—	—	—	—	—
<i>Nuttallornis borealis</i> , Olive-sided Flycatcher	—	—	—	—	V	—	—	—	—	—	—	—	—	—
<i>Riparia riparia</i> , Sand Martin	—	—	x	—	X	X	—	—	—	x	—	x	x	—
<i>Hirundo rustica</i> , Barn Swallow	—	—	X	x	X	X	—	—	—	x	—	x	x	—
<i>Petrochelidon pyrrhonota</i> , Cliff Swallow	—	—	—	—	—	x	x	—	—	x	—	x	x	—
<i>Catharus ustulatus</i> , Swainson's Thrush	—	—	—	—	—	x	—	—	—	—	—	—	—	—
<i>Vireo olivaceus</i> , Red-eyed Vireo	—	—	—	—	V	—	—	—	—	—	—	—	—	—
<i>Dolichonyx oryziborus</i> , Bobolink	—	—	—	—	—	x	—	—	—	—	—	—	—	—
<i>Setophaga ruticilla</i> , American Redstart	—	—	—	—	V	—	—	—	—	—	—	—	—	—

SYMBOLS

X: Migrants of regular occurrence in moderate to high numbers

x: Migrants of regular occurrence in small numbers

V: Vagrants

PACIFIC COAST REGION

- a: Pacific Ocean
 b: Pacific Seaboard
 c: Loma
 d: Superdesert
 e: Coastal Valleys & Irrigations
 f: Coastal Wetlands

WEST ANDEAN REGION

- a: Desert Scrublands
 b: Mountain Scrublands
 c: Tolar
 d: West Andean Valleys
 e: West Andean Wetlands

ALTIPLANO

- a: Puna Grasslands
 b: Altiplano Farmlands
 c: Altiplano Wetlands

Additions and corrections to the avifauna of Zaire (2)

by M. Louette

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These comments are due in part to reidentifications of specimens in Koninklijk Museum voor Midden-Afrika (KMMA). They are a follow up of a first series (Louette 1987).